IV. *On a new species of the genus* Orthezia. By J. W. Douglas.

[Read February 6th, 1884.]

Plate II.

In June, 1881, Monsieur J. Lichtenstein, of Montpellier, had the kindness to send me two examples, male and female, of an *Orthezia*, with the following very interesting information:—"I send you the male of an *Orthezia* which I consider is different from *O. urticæ*; it comes from the island of Montecristo, Italy, where it feeds on *Erica arborea*. I enclosed it, as a nymph, between two pieces of mica, but it has nevertheless undergone its change to imago, and is perfectly fresh, without a bristle of its fine tail lost. I intended to describe the insect, but, as I have no time left now, I send also the female, put alive between two pieces of glass, and there some young ones have emerged from her. Of course they came out of eggs enclosed in the pouch formed by the chalky tail-piece, and were not laid alive. If you please you can describe the whole, having male, female, and young." After long hesitation, caused by the imperfect condition of the female, I have now, in default of having obtained a better example, resolved to make the description, as well as the material at hand admits; the deficiency may be supplied hereafter.

Orthezia mœnariensis.

Mas. Niger. Capite parvo, transverso, antice angusto, declivi, postice tribus ocellis munito; oculis magnis, productis; antennis longissimis, articulis duobus primis brevibus, crassis, parce setosis, cæteris (7) longis, subæqualibus, filiformibus, subtiliter setulosis, piceo-nigris; pronoto magno, subquadrato, in quatuor partes convexas, diviso, angulis anticis depressis; scutello magno; alis (ant.) longissimis, latis, margine postico late rotundato, griseis, hyalinis, farinosis, vena furcata fusca; halteribus parvis, nigris, apice obtuso duabus setis recurvis instructo; abdomine brevi, segmento abdominali ultimo pluribus setis longissimis albis superne instructo, segmentis genitalibus liberis; pedibus piceo-nigris, setulosis. Long. corp. fere ½ lin., cum alis plus 1 lin., cum penicillo 1½ lin.

Fem. Atra. Corpore supra laminis cereis albis instructo (in hoc exemplo fortuito fere abruptis); antennis brevibus, 9 articulatis, nigris; marsupio niveo, supra canaliculato, infra valde convexo, levigato, leviter striato; pedibus nigris. Long. cum marsupio 1 lin.

Hab. in insula Montecristo (olim Mænaria) in *Erica arborea*.

♂. Black. Head small, transverse, anteriorly narrow and incurved, posteriorly with three distinct ocelli; eyes large, anterior, prominent; antennæ pitchy black, very long, the 1st and 2nd joints short, thick, sparingly setose, the remainder filiform, long, subequal, finely setulose. Pronotum large, subquadrate, anterior angles depressed, surface divided into four elevated convex portions. Scutellum large. Wings of the generic form,—very long, except at the base very broad, posteriorly broadly rounded,—transparent, smoky grey, farinose; the furcate nervure fuscous. Halteres small, sinuate, black, the obtuse apex with two recurved setæ.* Abdomen short; from the upper surface of the last true abdominal segment projects a very long pencil of slender white setæ, beneath which the genital segments lie free. Legs pitchy black, setulose.

♀. Black; above clothed with snow-white, cereous laminations (in the specimen before me nearly all these have been rubbed off, only two or three anterior and two posterior ones remaining, the latter overlapping the base of the marsupium). Antennæ short, stout, 9-jointed, the apical joint setigerous.† Marsupium snow-white, above as long as the visible part of the body, canaliculate; beneath arising at the posterior coxæ and entirely covering the abdomen, very convex, and posteriorly curved upwards, like the stern of a ship, smooth, finely striate. Legs black, finely setulose.

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* Burmeister, among the generic characters of the male *Dorthesia*, merely gives briefly "kurzen blattförmigen Schwingen" (Handb. ii. 76). Amyot and Serville do not denote the presence of halteres in the male of this genus, and, although Prof. Westwood does notice them (Introd. Mod. Class. Ins., ii., p. 445), he does not indicate them in his figure (Frontisp., fig. 8). In his 'Essai sur les Cochinelles' Dr. Signoret does not mention halteres among the characters assigned to the male of the genus *Orthezia*, but, in the introductory remarks on the *Coccidæ* generally, he says (p. 32), after describing the fore wings ("les élytres"), "En dessous on observe deux balanciers plus ou moins longs et plus ou moins larges, paraissent articulés et finissant généralement par une soie en forme de crochet." The "balanciers" are represented in the figures of species of several genera.

† The antennæ of the adult female of *Orthezia urticæ* are reported by all authors as having only eight joints, but in the present species there are certainly nine, as shown in figs. 4, 4*a*, and 5.

Some of these particulars are, of course, generic characters, yet the species being new, and the male in all the known species being rare, at least in collections, I have deemed it best to mention them; but some of the characters are hardly in accordance with those ascribed to *Orthezia*, of which the formula should be enlarged accordingly.

The exuviated skin of the nymph or pupa of the male (fig. 6), ruptured in front by the exit of the perfect insect, is a transparent mask of the imago, except as to the wings, caudal setæ, and antennæ (of seven joints only); it is also of great interest in showing, unexpectedly, *two* claws at the end of all the monomerous tarsi, instead of the single one in the larva and imago. I cannot find that the pupa has been noticed in any species of this genus, the reason being, probably, that it is inconspicuous and secluded, and that the duration of existence in the pupa-state is very short.

The young black larvæ which came out of the maternal marsupium, as before stated, still remain between the glasses; I apprehend they had soon died, and, being loose, have become somewhat damaged by shaking about during their travel to me, but there yet remain on the anterior part of their bodies some distinct bud-like lamellæ.

M. Lichtenstein, however, having written, "All larvæ, male and female, are born entirely bare, and the secretion comes only after some days," I communicated this to the late Mr. G. Norman, who was then paying great attention to *O. urticæ* and *O. cataphracta*, at Pitlochry, and he replied:—"As to the larvæ being quite free from the waxy covering on being hatched, I much doubt it. I did not see the actual hatching-out, but I saw the larvæ when they would scarcely have been more than a few hours, or perhaps a day, old, and they certainly were then not naked, but covered with the lamination which showed the pattern quite distinctly; they were then not larger than small grains of sand,—decidedly smaller than the eggs themselves." In proof of his statement he sent a larva of *O. urticæ*,—a perfect miniature of a full-grown larva,—and the egg-shell out of which it had come, and the insect was not longer than the shell.

In the Trans. Ent. Soc. Lond., N. S. iv., Proceed., p. 5, is a note by the late Mr. E. Newman "On the parturition of *Dorthesia characias* (*O. urticæ*)", written *more suo*, in

which, after giving an account of the way in which he saw the young ones come out from the body of the mother, he says:—"After their death, measured longitudinally and transversely, I found the body was ·024 in., so that it was nearly a circular disk, presenting, however, a number of elevations, depressions, and irregularities, which possibly resulted from drying: the colour was pitchy red, but attached to the dorsal envelope in several places, and without any semblance of regularity, were a number of minute flattened bodies, perfectly white, and having the appearance of little flakes of snow; these are so numerous as to give the little creatures quite a dusty appearance."

MM. Amyot and Serville (Hemipt., p. 622) quote the following original observations by l'Abbé d'Orthez, saying:—"L'abbé d'Orthez a trouvé dans un seul de ces sacs (marsupium) quatre-vingt-cinq petits éclos, tous recouverts de leurs lames farineuses, et une quinzaine d'œufs qui pétillaient sous l'ongle qui les écrasait. . . . . La première mue arrive environ un mois après leur sortie; l'insecte sort de son fourreau par une ouverture qui se fait sur la partie antérieure du dos; il est alors tout nu, son corps et ses pattes couleur de chair; le même jour, on le voit se recouvrir de nouvelles lames, qui, trois ou quatre jours après, ont pris un accroissement considérable; et alors les pattes deviennent noirâtres." Speaking also of a female which had been purposely deprived of its scales, the Abbé says:—"L'insecte, ainsi dépouillé, ne paraît pas en souffrir; il court et mange comme à l'ordinaire. Au bout de quelques jours, il se trouve recouvert d'une poussière blanche qui augmente peu à peu et finit par prendre le même arrangement qu'auparavant. Cependant ceux qui ont été élevés dans des boîtes n'acquièrent jamais une régularité aussi parfaite."

The deduction from all these observations is that the larva, in all the species of *Orthezia*, is bare when excluded from the egg-shell; that it is also bare at the occurrence of each successive moult; and that in all these cases it is quickly covered by the deposit of waxy secretion, which more or less rapidly increases and assumes the form and disposition of the lamination characteristic of its species, which in the female continue during the duration of the life of the insect, even after the marsupium is formed, and in the male until the pupa is formed beneath the integument.

Notwithstanding the imperfection of diagnosis, in consequence of the accidental want of lamellation on the back of the female of *O. mœnariensis*, the species appears to be of the type of *O. urticæ*, but it is quite distinct from it, notably by its very diminutive size (not half) especially noticeable in the female, which sex has 9-jointed antennæ, is blacker in the body, legs, and antennæ, has the channels on the upper surface of the marsupium proportionately slighter, the under side being much more convex and more decidedly striate; while in the male there are three ocelli posteriorly on the head, the pronotum has another formation, &c.

PS. (Dec. 10th, 1883). — Since the foregoing was written I have received from M. Lichtenstein another example of the male, which quite confirms my description. At the same time he had the goodness to send some other specimens of the species, prepared for the microscope, illustrating the life-history. Of these two are figured:—

Fig. 5. An adult female deprived of its waxy covering.

Fig. 7. An oval, luteous, naked pupa or nymph, which I apprehend had only just assumed this form, and that its ultimate development as a pupa, including another moult, had been arrested,* for although, as might have been expected, there is no rostrum yet, as compared with the skin (fig. 6), the antennæ are very short and the articulations ill-defined, the legs are short, and there is but one tarsal claw instead of two, as seen in figs. 6 and 6*a*. Most remarkable also are the two large lateral projections, one on each side of the mesothorax, which I think represent sheaths containing incipient wings, such as are seen in the nymph form of the *Psyllidæ*. They appear also to be analogous to the thoracic adjuncts,

* Jan. 22nd, 1884. This supposition may now be regarded as a certainty, for in an extremely interesting article in the January number of the 'Wiener ent. Zeitung,' iii., p. 11, Dr. Franz Löw has given in detail the results of his study of the life of *Orthezia urticæ*, Linn., from the larva to the imago, and he has found that in the male the nymph has two distinct stages, of which the first ("Pronymphe") lasts but three days, and the second ("wahre Nymphe") lasts for eight days, and from the last form the imago emerges. In the present species fig. 7 represents the Pronymph and fig. 6 the true nymph. The information contained in this excellent paper fills up several gaps in our knowledge of the biology of the remarkable genus *Orthezia*, and deserves special attention.

described and figured by Dr. Signoret as appertaining to the nymph, or what he, with some hesitation, regards as the nymph-form, of *Gossyparia ulmi*, Geoffr., and which he terms "moignons d'élytres" (Ess. Coch., pp. 318 and 320, pl. 15, fig. 2 *b*). I can find no trace of these wing-sheaths in the pupa-skin.

The objects represented by the figures 5 and 7 having been mounted in Canada balsam are thereby rendered transparent, and the segmentation of the bodies, as well as the base of the projections on No. 7, is not clearly recognisable.

Explanation of Plate II.

Orthezia mænariensis.

Fig. 1. Male, upper side.
1*a*. ,, origin of caudal setæ.
2. ,, under side.
2*a*. A halter, enlarged.
3. Female, upper side.
4. ,, under side.
4*a*. ,, antenna (beneath).
5. ,, denuded.
6. Male, pupa-skin.
6*a*. ,, a tarsus showing the two claws.
7. ,, young pupa or nymph (under side)